

REMARKS

This amendment is offered in reply to the office action of March 18, 2005.

On page 2, claim 12 is objected to for lacking a period at the end. Applicants have amended claim 12 to add a period. Applicants request reconsideration of the objection to claim 12.

On page 2, claim 17 is objected to as being in improper form. Applicants have amended claim 17 in a manner believed to place it in acceptable form. Applicants request reconsideration of the objection to claim 17.

On page 2, claims 1-16, 19, 21-24, and 25 are rejected under 35 USC 102(b) in view of US 6 480 730.

Applicants believe the pending claims distinguish over the '730 patent. For example, claim 1 recites a sensor comprising a substrate and a membrane connected to said substrate and having a surface on which an interaction with a medium occurs in a manner to deflect said membrane relative to said substrate.

In contrast, the '730 discloses an expandable polymer 70, Figure 4, that interacts with an analyte via passages in an analyte-permeable grid 72. Swelling or expansion (a dimensional change) of the polymer 70 in well 68 in Figure 4 displaces or deforms a metallic membrane 76. Figure 5 referred to by the examiner shows the membrane displaced by swelling of the polymer 70 as a result of interaction of the polymer with an ionic solution to which the polymer is exposed.

Pending claim 1 thus is believed to distinguish over the '730 patent.

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The same is true of claims 2, 4, and 13, which recite that the membrane has a convex or concave shape before interaction. In contrast, the '730 patent disclose a flat membrane that is displaced to the shape of Figure 5 by swelling of the polymer 70. With respect to claim 13, the examiner refers to column 6, lines 12-27. However, that description discloses that the membrane itself is made of a metallic material. There are no metallic layers imparting a convex or concave shape to the membrane before interaction.

Claim 3 likewise distinguishes over the '730 patent in reciting that the surface of the membrane has a chemical or biomolecular reaction agent thereon such that a reaction with species of an analyte occurs on the membrane surface in a manner to deflect the membrane. The membrane of the '730 patent has no reaction agent to this end. As mentioned, it is the polymer 70 of the '730 patent that interacts with the analyte so that the polymer swells in the well 68.

Claim 7 likewise distinguishes over the '730 patent in reciting that the surface of the membrane has a coating comprising a chemical or biomolecular reaction agent and claims 8-10 wherein the coating includes reaction molecules to provide chemical or biomolecular reaction sites on the membrane. The membrane of the '730 patent has no reaction agent. The element 82 referred to by the examiner is an electrode. As mentioned, it is the polymer 70 of the '730 patent that interacts with the analyte so that the polymer swells in the well 68.

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Claim 11 likewise distinguishes over the '730 patent in reciting that the membrane includes an interior surface subjected to gas pressure to impart a convex shape to the surface and an exterior surface having a reaction agent thereon such that a reaction with species of an analyte occurs on the exterior surface in a manner to deflect the membrane relative to the substrate while said membrane has the convex shape imparted thereto by the gas pressure. Column 7, lines 8-27 referred to by the examiner of the '730 patent are utterly devoid of such claimed features.

Claim 19 likewise distinguishes over the '730 patent in reciting a transducer comprising a substrate and a membrane having a surface and peripherally connected to said substrate and being deflectable relative to said substrate by an interaction occurring on the membrane surface.

The same is true of pending claims 21-24 and 25 for the above reasons.

Reconsideration of the Section 103(a) rejection of claims 1-16, 19, 21-24, and 25 is requested.

On page 4 of the office action, claims 18, 20, 26, and 27 are rejected under 35 USC 103(a) as obvious in view of the '730 patent taken with US Patent 6 647 796.

With respect to claims 18, 20, and 26, the examiner acknowledges that the '730 patent does not disclose or suggest a gas-containing gap that gas pressurizes the sensor when moved toward the substrate.

The examiner cites the '796 patent to cure this deficiency but fails to recognize that the '796 patent merely discloses a gas pressure microsensor wherein gas pressure in the microcavity 24 within the membrane 20 is sensed.

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The '796 patent does not disclose or suggest the sensor of claim 18 comprising a) a sensor area according to claim 1 and b) an actuation area in gas flow communication with the sensor area and having an actuation membrane spaced from the substrate by a gas-containing gap and movable in a manner to gas pressurize the sensor area when said actuation membrane is moved toward the substrate. In the '796 patent, fluid pressure in microcavity or microchannel 24 simply is measured.

Neither the '730 patent nor the '796 patent alone or together suggest a) a sensor area in gas flow communication with b) an actuation area that includes an actuation membrane spaced from a substrate by a gas-containing gap and movable in a manner to gas pressurize the sensor area as set forth in claim 18.

The same is true of claims 20 and 26. The '730 patent employs swellable polymer 70 while the '796 patent merely measures gas or fluid pressure in microcavity or microchannel 24. Neither cited patent discloses or suggests the features of pending claim 20. Neither cited patent discloses or suggests the features of pending claim 26 for generating a flow of gas.

With respect to claim 27, the examiner acknowledges that the '730 patent does not disclose or suggest the method features of claim 27 to impart an arcuate shape to the membrane. Applicants note that the '730 patent merely discloses etching to leave a flat metallic membrane at the bottom of well 68.

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The examiner cites the '796 patent but fails to recognize that this patent discloses a gas pressure microsensor wherein gas pressure in the microcavity 24 within the membrane 20 is sensed. In contrast to the examiner's allegation, the bowed membrane 20 of the '796 patent is formed by epitaxially growing a p-GaN layer 12 and etching an underlying n-GaN base layer 13 in much the same manner as the deficient '730 patent.

The layers 26a, 26b of the '796 patent form a piezoelectric strain sensor on the membrane 20. There is no disclosure whatsoever in the '796 patent of Applicants' method of claim 27 involving heating a membrane to impart an arcuate shape thereto, depositing one more metallic layers on the heated membrane, and cooling the membrane to ambient temperature, the membrane being constrained by the one or more metallic layers in an arcuate shape.

Neither the '730 patent nor the '796 patent alone or together suggest Applicants' claim 27.

Reconsideration of the rejection of claims 18, 20, 26, and 27 is requested.

Applicants have added new claim 28 which is believed to be allowable as well. The Commissioner is authorized to charge the fee for new claim 28 to my deposit account No. 20-1124.

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Applicants believe the pending claims are in condition for allowance, and action to that end is requested.

Respectfully submitted,



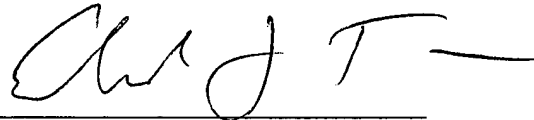
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CERTIFICATE OF MAILING

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